

REMARKS

Claims 1-8 are pending in the present application. Claim 7 is herein amended. New claim 8 has been added, finding support in the original specification in paragraph [0017]. No new matter has been presented.

Double Patenting

Claims 1, 3 and 5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 9 of copending Application No. 10/567,902.

The Examiner asserts that although copending Application No. 10/567,902 does not specifically claim that the battery comprises a separator separating the positive and negative electrodes from each other, one of ordinary skill in the art would understand that it is inherent that the battery must comprise a separator in between said positive and negative electrodes in order for the battery to function properly.

Applicants traverse this rejection because the cited application is neither commonly owned/assigned with the present application, nor does it have any common inventor. Therefore, a rejection for double patenting is improper.

Claim Rejections - 35 U.S.C. §112

Claim 7 is rejected under 35 U.S.C. §112, second paragraph as being indefinite. The Examiner indicates that the phrase “is deployed inside a metallic case whose thickness is 0.15 to

0.50 mm” (claim 7, lines 2-3) is indefinite because it is unclear whether the thickness refers to the overall thickness of the case or the thickness of the metal piece(s) used to make the case. For examination purposes, this statement was interpreted as meaning thickness of the metal piece(s) used to make the case.

Applicants herein amend claim 7 to clarify the invention.

Claim Rejections - 35 U.S.C. §103(a)

Claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hamamoto et al. (JP 2002-124297) in view of Noh (US 2004/0101762).

With regard to claim 1, the Examiner admits that Hamamoto et al. fails to specifically state the amount of vinylene carbonate used. The Examiner concludes that it would have been obvious to add the 0.1-50 wt% of vinylene carbonate of Noh to the nonaqueous electrolyte of Hamamoto et al. in order to inhibit swelling at high temperature and to improve cycle life characteristics of the battery (paragraph [0020]).

Claim 2-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hamamoto et al. in view of Noh as applied to claim 1 above, and further in view of Kanekiyo et al. (JP 2002-313419). The Examiner admits that Hamamoto et al. (JP 2002-124297) fails to teach the packing density of said negative electrode active material or to specifically state the amount of DEC, and EC used. The Examiner concludes that it would have been obvious to add negative electrode active material having a packing density of 1.34g/mL of Kanekiyo et al. to the battery of modified Hamamoto et al. in order to increase battery capacity (paragraph [0010]). The

Examiner further concludes that it would have been obvious to add the nonaqueous electrolyte containing 25-40% EC, 25-60 vol% MEC/EMC, and 10-40 vol% DEC of Kanekiyo et al. to the nonaqueous electrolyte of modified Hamamoto et al. in order to optimize the ionic conductivity/electric property of said nonaqueous electrolyte (paragraph [0012]).

Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hamamoto et al. in view of Noh, as applied to claim 1 above, and further in view of Kinoshita et al. (US 2004/0091780). The Examiner admits that modified Hamamoto et al. fails to teach a metallic case with specified thickness. The Examiner concludes that it would have been obvious to add the metallic case having thickness of 0.5 mm or less Kinoshita et al. to the nonaqueous secondary battery of modified Hamamoto et al. in order to provide an airtight environment for said nonaqueous electrolyte battery (abstract) and thereby prevent said electrodes and said electrolyte from being exposed to contaminants.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some apparent reason or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Finally, there must be a reasonable expectation of success. (Manual of Patent Examining Procedure (MPEP) §2142). The suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based merely on Applicant's disclosure.

Applicants respectfully submit that one skilled in the art at the time of the invention would not have made the asserted combination because there would have been no expectation of success. In particular, Applicants submit that the references themselves provide reasons for not making the asserted combination.

Applicants note that the invention of claim 1 of the present application is a non-aqueous secondary battery; of which the electrolyte contains vinylene carbonate (VC) and di(2-propynyl) oxalate (D2PO). As a result of the claimed structure of the claimed battery, the battery shows excellent charge-discharge cycling characteristics at high temperature, and little swelling as remarkable effects.

On the other hand, Hamamoto et al. discloses addition of alkyne derivative to electrolyte. The effect and goal of the invention of Hamamoto et al. is enhancement of characteristics under low temperature and charge-discharge characteristics by preventing propylene carbonate (PC) of electrolyte from being decomposed on surface of graphite electrode.

Applicants note that Noh discloses an electrolyte ester-based or ether-based organic solvent, lithium salt, an additive compound having at least two carbonate group and 0.1~50 wt% content of VC in the electrolyte. The effect of disclosed invention of Noh is enhancing electrochemical characteristics *and preventing swelling of the battery*. (Emphasis added).

The Examiner concludes that it would have been obvious to add the 0.1-50 wt% of vinylene carbonate of Noh to the nonaqueous electrolyte of Hamamoto et al. in order to inhibit

swelling at high temperature and to improve cycle life characteristics of the battery (paragraph [0020]).

However, Applicants submit that a person of skill in the art would have recognized by reading Noh that addition of VC to electrolyte does not reduce swelling of a secondary battery. Comparison between Examples 2 and 5 with respect to Thickness variation ratio (see Tables 1 and 2 of Noh) shows that addition of VC enhances swelling, rather than reduces swelling. Comparison between Comp. Examples 2 and 3 also shows the same tendency. Furthermore, the battery of Example 6 shows larger swelling than that of Example 7, in spite of the electrolyte containing more VC than electrolyte of Example 7.

Those comparisons would have clearly demonstrated to the person of skill in the art that adding VC to electrolyte of a secondary battery does not effect to swelling of the battery. Noh does not suggest a method of solving the problem, but merely suggests the problem to be solved.

Therefore, the person of skill in the art would not have combined Hamamoto et al. with Noh, to reduce swelling of a battery. Therefore, Applicants submit that the rejection of claim 1 is incomplete.

Because claim 1 is patentably distinguished, Applicants submit that inventions of claims dependent therefrom are also patentably distinguished.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

Application No. 10/584,266
Attorney Docket No. 062698

Amendment under 37 C.F.R. §1.111
Amendment filed November 26, 2008

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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Enclosure: